Questions and Answer Fact Sheet
Duracell Inc. Site
Village of Sleepy Hollow
Westchester County
October 2011

Background:

The Duracell Inc. Site, located at 60 Elm Street in the Village of Sleepy Hollow, was home to a battery manufacturing company that ceased operations in 1984. Under a legal agreement between the New York State Department of Environmental Conservation (NYSDEC) and Duracell, an environmental investigation of the property conducted between 1985 and 1989 identified mercury and lead contamination in soil on-and off-site. A site-specific remedial program implemented between 1988 and 1993 resulted in the removal of the on-site building, underground storage tanks, and excavation and removal of contaminated soil from the site, eight adjacent properties and the former Duracell parking lot.

Why is the State revisiting the Duracell Inc. Site at this time?

In late 2008, a prospective home buyer had the soil sampled at a residential property located immediately south of the Duracell Inc. Site. The home buyer's sampling result prompted the property owner to contact the NYSDEC and the New York State Department of Health (NYSDOH) requesting an evaluation of the findings. The NYSDEC and NYSDOH evaluated these results in conjunction with remedial activities previously completed at the Duracell Inc. Site (1988-1993). The NYSDEC and NYSDOH also examined the results in the context of the mercury and lead soil cleanup objectives (SCOs) that were established by the state in 2006. As a result of the evaluations, the NYSDEC collected additional samples in the area in 2009 to provide a better understanding of current conditions. Some of the sampling results from the 2009 sampling program exceeded the SCOs for mercury and lead in a residential setting. However, soil concentrations that are higher than the SCOs are not necessarily a health concern.

What are soil cleanup objectives ("SCOs")?

In 2006, as required by changes in the Environmental Conservation Law, the NYSDEC (in consultation with NYSDOH) established soil cleanup objectives or "SCOs" for chemicals in soil. SCOs are contaminant-specific soil concentrations that are protective of public health and the environment. Soil concentrations that are higher than established SCOs for a site are not necessarily an environmental or health concern. The degree of public health concern when an SCO is exceeded depends on several factors, including (among others) the magnitude of the exceedance, the accuracy of the exposure estimates, other sources of exposure to the chemical, and the strength and quality of the available toxicological information on the chemical. The SCOs are contained in NYSDEC's Environmental Remediation Programs' regulations, Title 6 of the Official Compilation of New York Codes, Rules and Regulations, Part 375-6 (i.e., 6 NYCRR Part 375-6).

How did contamination extend beyond the former plant?

Air emissions from site operations (e.g., exhaust from various air handling units servicing the plant, operation and maintenance of cyclones and bag houses used for particulate collection) at the former battery manufacturing plant were one of the potential sources of contaminants found on affected properties.

What studies were performed by the NYSDEC in 2009?

In 2009, the NYSDEC completed an assessment of soil conditions in the neighborhood around the Duracell Inc. Site. Background samples were collected from Patriot's Park, Kingsland Point Park, and Rockefeller State Park Preserve on May 6-7, 2009, and analyzed for total lead and total mercury. Background samples were collected to examine the naturally occurring levels of lead and mercury that are found in soils in the vicinity of the Duracell Inc. Site. The parks were chosen based on their locale in the general area while presumed to have not been affected by historic operations at the former battery plant due to their distance from the site. Samples were also collected from thirty-nine residential and Village-owned properties during May 2009, and analyzed for total lead and total mercury. Based on the findings of this assessment, additional investigative activities were required to determine the extent of contamination across the neighborhood and gather the necessary information to clean up the affected properties.

What is background?

Background refers to levels of an element, chemical or contaminant in an environmental medium that is naturally occurring or regionally widespread, such as historic fill, and not attributable to a site.

What is the former plant operator's (Duracell) involvement with the site?

New York State Law requires that the responsible parties for the site contamination must be given the opportunity to undertake any cleanup action prior to the state using State funds to perform such action. In December 2009, The Gillette Company (Gillette; successor to Duracell) entered into an agreement (Administrative Order on Consent) with the NYSDEC to complete an investigation of the site and perform the necessary remedial action. Gillette, working under the direction of the NYSDEC, will implement remedial action on affected properties, as necessary.

What studies were performed by Gillette in 2010/2011?

Between September and December 2010, Gillette completed the initial phase of the remedial investigation of the site. The work was completed at the direction of the NYSDEC, and followed the approved *Phase I Remedial Investigation Work Plan (August 2010)*. The work included collecting and analyzing approximately 2,000 soil samples from 146 properties in the vicinity of the Site.

A *Phase I Remedial Investigation Data Summary Report* has been completed and approved by the NYSDEC. This report provides the data collected, along with a review of other potential sources of constituents in soil in the area, such as historic fill. In addition, each property owner has been sent a letter in the mail containing the results for the soil samples collected on their property.

What is historic fill?

"Historic fill material" is non-native material that was historically deposited or disposed to create usable land by filling water bodies, wetlands or topographic depressions, which is not connected with subsequent operations at the location of the filling, and which was contaminated prior to the filling. Historic fill may include solid wastes such as coal ash, wood ash, municipal solid waste incinerator ash, construction and demolition debris refuse and land clearing debris.

Various debris consisting of coal, cinders, ash, construction and demolition debris (brick fragments and glass), vegetative organics, and occasionally shells, was identified in the soil samples collected during the 2009 NYSDEC assessment and 2010 Phase I sampling programs. Additionally, a review of available historical information indicates that fill material was placed in the general area of the site between the late 1800s and early 1900s, prior to the commencement of battery manufacturing operations at the site in 1945. Metals such as mercury and lead were constituents of many products historically used in residential and industrial settings.

What does the presence of historic fill in the area mean?

Information gathered during the initial phase of the remedial investigation indicates that historic fill material was placed in the area prior to the existence of the former battery plant. Based on the pattern of lead distribution in the Phase I investigation area soil, the NYSDEC has determined that lead present in the area can be attributed to sources other than the former battery manufacturing operations.

Although low levels of mercury are also present in the historic fill material in the area, levels of mercury contamination on properties adjacent to and downwind of the site are greater than the level that is attributed to historic fill conditions.

What is mercury?

Mercury is a naturally occurring metal that is found at low levels in the environment. Natural sources of mercury in the environment include the breakdown of minerals in rocks and volcanic activity. It can also be released into the environment through human activities such as mining, smelting, industrial processes, and combustion of fossil fuels. Mercury can exist in several different forms, which are elemental (metallic) mercury, inorganic mercury (when mercury combines with elements such as sulfur, chlorine or oxygen), and organic mercury (when mercury combines with carbon). Air emissions from the former battery plant contained an inorganic form of mercury called mercuric oxide. Over the years, this form of mercury is subject to weathering (rain, sun, etc.), and thus can transfer or degrade into other forms of mercury.

What is lead?

Lead is a metal that occurs naturally in the environment at low levels, and is usually combined with other elements. Lead also gets into the environment from human activities, such as historical use of lead in gasoline (leaded gasoline, which has been banned in the US since 1996), paint (manufactured before 1978) and pesticides, releases from mining lead and other metals, and releases from factories that make or use lead, lead alloys and lead compounds. Many older homes contain lead-based paint.

What are the remedial goals for the site?

In 2010, the NYSDEC issued a Soil Cleanup Guidance policy (CP-51) that includes various approaches for developing soil cleanup levels specific to a site. The regulations and Soil Cleanup Guidance allow for site-specific soil cleanup objectives (SSSCOs) to be calculated on a site-specific basis, which would take into account specific characteristics of the site, including background conditions and other factors.

Based on a site-specific evaluation, the remedial goal for the site area for mercury is 4.8 mg/kg (milligrams of mercury per kilogram of soil or parts per million). Additional information can be found in the *August 2011 Technical Memorandum*, which details development of the site-specific soil cleanup objective (remedial goal) for inorganic mercury.

Because lead present in area soils can be attributable to sources other than the former battery manufacturing operations, remediation of properties in the area will not be conducted based on the presence of elevated lead levels.

Will some form of additional action be necessary?

The analyses of the soil samples collected in some yards show the presence of mercury in soils at concentrations above the SSSCO and thus additional actions are necessary. The affected soil will be removed from the property (to the greatest extent feasible) and the area of excavation will be backfilled with clean material and restored. A plan of action describing the general procedures for the cleanup, called the *Interim Remedial Measure Work Plan*, has been developed and will be shared with village officials and the local community. Additional documentation will be prepared to address specific remediation requirements at each individual property or groupings of properties. Cleanup activities will not begin on a property until a written agreement has been obtained from the owner of the property.

How can I be exposed to contaminants in the soil?

Mercury and lead are present in soil in the site area. People can be exposed to contaminants in soil if they get soil particles on their hands and swallow the soil through hand-to-mouth activity. Some exposure may also occur when soil is tracked inside a building and becomes part of indoor dust. Other ways people could be exposed are by breathing windblown soil and dust particles, or by eating vegetables grown in contaminated soil. Young children have the greatest potential for exposure to soil because they often come into direct contact with the soil while playing or digging in the dirt, and may swallow the soil by putting their fingers or hands in their mouths.

What health effects can be caused by exposure to mercury and lead in soil?

The risk for adverse health effects from exposure to any chemical depends on the chemical's toxicity, the amount of the chemical to which a person is exposed, and how long and how often the exposure occurs. Ingestion of large amounts of inorganic mercury can cause damage to the kidneys. Ingestion of large amounts of lead causes adverse effects on the nervous system (leading to learning problems and decreases in cognitive ability), and is of particular concern for small children, whose nervous systems are still developing. These effects typically occur at mercury and lead exposure levels greater than those found during this investigation.

Will my children get sick if they play in my yard? What measures should I take to protect them?

We do not expect there to be any immediate health effects from exposure to inorganic mercury or lead in the soil, because the exposure levels that cause these effects are much higher than any short-term contaminant exposures we would expect from activities in your yard. However, you can reduce the chances for long-term exposure to inorganic mercury and lead by taking steps to minimize direct and repeated contact (particularly among young children) with bare soils. Maintenance of a grass or mulch cover will help prevent direct contact with the soil. Unnecessary digging in the dirt should be avoided, and children and adults should wash hands after outdoor activities to help reduce the potential for exposure. The use of doormats and periodic damp mopping of floors can help reduce exposure to outdoor soil that might be tracked indoors.

Should I eat vegetables grown in my yard?

Eating homegrown vegetables is a decision that is yours to make. However, until the yards are cleaned up, eating vegetables from your garden may expose you to elevated levels of lead and mercury. Some studies suggest that inorganic mercury and lead can be taken up from soil into garden vegetables. The amount of mercury or lead taken into the vegetables is difficult to know because it depends on many factors such as the specific kind of vegetable, characteristics of the soil, the level of lead and mercury in the soil and others. Also, soil can stick to vegetables and then be taken into the body when the vegetables are eaten. To help reduce any exposures you might have from vegetable gardening, you can take some simple precautions. For example you may decide not to plant a vegetable garden until the yards are cleaned up. If you choose to garden, you can wash the vegetables and peel those such as cucumbers, potatoes and carrots to help remove soil adhering to the surface. You can also wear gloves when digging in your garden, and wash your face and hands after working in the garden. You might also want to consider growing vegetable plants in a raised bed or container with composted manure or clean soil. All of these “healthy gardening practices” make sense for any garden since they can help to reduce people’s exposure to the chemicals and microorganisms that are present in soils.

Can we use Barnhart Park?

Yes. Much of this heavily used public park is covered with man-made materials that prevent contact with the soils beneath. Where park soils are covered by grass, testing found no mercury or lead contamination in surface soils that requires action. The park's location is historically upwind from the former battery plant.

At what mercury and lead levels should I take these precautions to reduce the chances for exposure?

In 2006, the New York State Department of Health established health-based residential soil cleanup objectives (SCOs) of 1.2 mg/kg for inorganic mercury and 400 mg/kg for lead. Both of these SCOs are levels of the contaminant in soil that are unlikely to result in adverse health effects, and were developed based on the assumption that people are exposed to soil

through activities that typically occur on residential properties (e.g., working and playing in the yard, gardening).

As stated above, a site-specific soil cleanup objective (SSSCO) for inorganic mercury of 4.8 mg/kg has been developed taking into account the same assumption that people are exposed to soil through activities that typically occur on residential properties (e.g., working and playing in the yard, gardening). Although the site-specific soil cleanup objective for mercury is greater than the established SCO, it is well below the exposure levels that may cause health effects in animals or humans. Several site-specific considerations also suggest that the actual exposure to mercury in soil could be lower than the exposure assumed in establishing the SCO. These considerations include the chemical form of the mercury, which may be less soluble than the form used to develop the SCO, and is less absorbed by the body; the relatively low number of vegetable gardens in the investigation area and the additions of soil amendments (e.g., mulch, topsoil) which may help to reduce mercury levels in garden soil; and the presence of grass cover on many properties in the area, which reduces the potential for direct contact with the soil.

The SCO and SSSCO for mercury are not "bright lines" between soil concentrations that will result in health effects and those that will not. Rather, these concentrations can be used to help guide decisions about when to take measures to reduce exposure to contaminants in soil. Reasonable and practical actions such as those discussed above can be taken to reduce the potential for mercury (and lead) exposure in soil (and therefore reduce the risk of adverse health effects) when soil levels are above these concentrations. The urgency to take actions increases as the level of soil contaminants increases, particularly when the levels are above these concentrations**.** Also, it is prudent to minimize getting soil into the body whether it is known to be contaminated or not.

Will a health study be done?

Prior to any off-site remediation, two separate independent biomonitoring studies of neighboring residents and former plant workers were conducted in 1986 by Phelps Memorial Hospital without state oversight, and in 1991 by the NYSDOH. While no elevated levels of mercury were reported in urine above the NYSDOH surveillance level of 20 micrograms per liter (µg/L), testing showed that some people may have been exposed to mercury from the facility or other sources. The closure of the Duracell facility in 1984 and the remedial work that was performed between 1988 and 1993 removed the major sources of exposure to mercury. Because these sources of exposure have been removed and because of the relatively small number of people still living in the area, a health (epidemiologic or statistical) study of area residents would not show any health effects that could be directly linked to emissions from the former facility. As described below, you should speak with your health care provider if you are concerned about any mercury or lead exposure you may have had.

Should I be tested for mercury or lead?

Whether or not to get tested is an individual decision. Total mercury levels (elemental, inorganic and organic) can be measured in urine. Everyone has a small amount of mercury in his/her body. An elevated level of mercury in urine indicates exposure to a source of elemental or inorganic mercury, but the test cannot identify where the mercury came from. In general, urine mercury levels can't predict whether or not people will have adverse health effects. If you have concerns about mercury exposure and want to get tested, consult your health care provider. The analysis should be done by a laboratory that is approved by the New York State Department of Health's Clinical Laboratory Evaluation Program.

Exposures to lead can be evaluated by measuring the level of lead in blood. Everyone has a small amount of lead in their body, and New York State regulations require medical providers to test children for lead when they are one year old and again when they are two years old. As with mercury, an elevated blood lead level suggests a source of exposure, but the test cannot identify where the lead came from. If you have a young child who has not recently had a blood lead test, and you have concerns about his or her potential lead exposure, you should consult your pediatrician about having your child tested.

Where can I get more information?

For project concerns, contact:
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For site-related health questions, contact:
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